

Claims

What is claimed is:

1. A laminated wear ring for a work piece polishing apparatus, the laminated wear ring comprising:

a toroidal shaped component formed of a high stiffness material and comprising a first substantially planar surface, an interior cylindrical surface and an outer cylindrical surface, the toroidal shaped component further comprising a first thickness adjacent the interior cylindrical surface and a second thickness greater than the first thickness adjacent the outer cylindrical surface, the first and second thicknesses measured in a direction perpendicular to the first substantially planar surface; and

a plastic laminate having first and second substantially parallel, substantially planar surfaces, the first substantially planar surface of the plastic laminate attached to the first substantially planar surface of the toroidal shaped component, the plastic laminate having a thickness measured between the first and second substantially parallel, substantially planar surfaces that is greater than the thickness of a work piece to be polished with the work piece polishing apparatus and less than about 1.5 mm.

2. The laminated wear ring of claim 1 wherein the high stiffness material comprises stainless steel.

3. The laminated wear ring of claim 1 wherein the plastic laminate further comprises an interior wall portion attached to the interior cylindrical surface.

4. The laminated wear ring of claim 3 wherein the plastic laminate further comprises an exterior wall portion attached to the outer cylindrical surface.

5. The laminated wear ring of claim 1 wherein the plastic laminate comprises polyetheretherketone (PEEK).

6. The laminated wear ring of claim 1 wherein the plastic laminate comprises Ertalyte TX.

7. The laminated wear ring of claim 1 wherein the plastic laminate is attached to the first

substantially planar surface of the toroidal shaped component using an adhesive.

8. The laminated wear ring of claim 7 wherein the adhesive is selected from the group comprising rubberized epoxy; acrylic adhesive; and cyanoacrylate adhesive.

9. The laminated wear ring of claim 1 wherein grooves are formed in the first substantially planar surface of the toroidal shaped component.

10. A laminated wear ring for a chemical mechanical planarization (CMP) apparatus for polishing a work piece, the laminated wear ring comprising:

a toroidal stainless steel component having a first surface, an interior cylindrical surface and an exterior cylindrical surface, the component having a first thickness adjacent the interior cylindrical surface and a second thickness greater than the first thickness adjacent the exterior cylindrical surface; and

a plastic laminate adhesively attached to the first surface and a portion of the interior cylindrical surface, the plastic laminate having a thickness less than about 1.5 mm.

11. The laminated wear ring of claim 10 wherein the plastic laminate comprises a first substantially planar surface for attachment to the first surface of the stainless steel component and a second substantially planar surface parallel to the first substantially planar surface.

12. The laminated wear ring of claim 11 wherein the portion of the plastic laminate adhesively attached to the portion of the interior cylindrical surface of the stainless steel component forms an exterior right angle with the first substantially planar surface.

13. The laminated wear ring of claim 12 wherein the plastic laminate further comprises a second component for attachment to the exterior cylindrical surface of the stainless steel component, the second component coupled to and extending from the first substantially planar surface.

14. The laminated wear ring of claim 10 wherein the plastic laminate comprises Ertalyte TX

15. The laminated wear ring of claim 10 wherein the plastic laminate comprises

polyetheretherketone (PEEK).

16. The laminated wear ring of claim 10, wherein the plastic laminate is made from a material having a K-factor of not more than $100 \times 10^{-10} \text{ in}^3\text{-min./lb.-ft.-hr.}$

17. The laminated wear ring of claim 10, wherein the plastic laminate is made from a material having a K-factor of not more than $50 \times 10^{-10} \text{ in}^3\text{-min./lb.-ft.-hr.}$

18. The laminated wear ring of claim 10, wherein the plastic laminate is made from a material having a coefficient of friction of not more than 0.3.

19. The laminated wear ring of claim 10, wherein the plastic laminate is made from a material having a coefficient of friction of not more than 0.2.

20. A laminated wear ring for a chemical mechanical planarization (CMP) apparatus for polishing a work piece, the laminated wear ring comprising:

a toroidal stainless steel component having a first surface, an interior cylindrical surface and an exterior cylindrical surface; and

a plastic laminate adhesively attached to the first surface and a portion of the interior cylindrical surface, the plastic laminate made of a material with a K-factor of not more than $100 \times 10^{-10} \text{ in}^3\text{-min./lb.-ft.-hr.}$

21. The laminated wear ring of claim 20 wherein the plastic laminate is made of a material with a coefficient of friction of not more than 0.3.

22. The laminated wear ring of claim 20 where the plastic laminate is adhesively attached to a portion of the exterior cylindrical surface of the toroidal stainless steel component.